Listing of Claims:

1-130. (Cancelled)

131. (Previously Presented) A method of inducing the formation or repair of blood vessels in a target tissue of a patient, the method comprising the step of administering to said patient an effective amount of an enriched population of cells that express the marker STRO-1.

132. (Previously Presented) The method of claim 131 wherein the cells that express the marker STRO-1 are mesenchymal precursor cells (MPCs)

133. (Previously Presented) A method according to claim 131 wherein the repair of blood vessels results in arteriogenesis.

134. (Previously Presented) A method according to claim 131 wherein the repair of blood vessels results in the coating of vasculature with cells that express alpha-smooth muscle actin.

135. (Previously Presented) The method of claim 131 wherein the enriched population comprises at least 0.01% MPCs capable of forming a clonogenic colony.

136. (Previously Presented) The method of claim 131 wherein the enriched population comprises at least 1% MPCs capable of forming a clonogenic colony.

137. (Previously Presented) The method of claim 131 wherein the

enriched population comprises at least 0.01% STRO-1bright MPCs.

138. (Previously Presented) The method of claim 131 wherein the enriched population comprises at least 0.1% STRO-1bright MPCs.

139. (Previously Presented) The method of claim 131 wherein the enriched population comprises at least 1% STRO-1bright MPCs.

140. (Previously Presented) The method of claim 131 wherein the enriched population of cells are additionally positive for one or more of the markers 3G5, MUC18/CD146 and alpha-smooth muscle actin.

141. (Previously Presented) The method of claim 131 wherein the enriched population of cells additionally co-express the marker VCAM-1.

142. (Previously Presented) The method of claims 131 wherein the enriched population of cells co-express any one or more of the markers selected from the group consisting of THY-1, VCAM-1, ICAM-1, PECAM-1, CD49a/CD49b/CD29, CD49c/CD29, CD49d/CD29, CD29, CD61, integrin beta5, 6-19, thrombomodulin, CD10, CD13, SCF, PDGF-R, EGF-R, IGF-1R, NGF-R, FGF-R and Leptin-R (STRO-2).

143. (Previously Presented) The method of claim 131 wherein the enriched population of cells are negative for markers of hematopoietic lineage such as CD34, CD45, and glycophorin-A.

144. (Previously Presented) The method of claim 131 wherein the enriched population of cells are derived from a tissue of the group consisting of adipose tissue, teeth, dental pulp, skin, liver, kidney, heart, retina, brain, hair follicles, intestine, lung, spleen, lymph node, thymus, pancreas, bone, ligament, bone marrow, tendon and skeletal muscle.

145. (Previously Presented) The method of claim 131 wherein the enriched population of cells are enriched from a perivascular niche within a vascularised tissue source.

146. (Previously Presented) The method of claim 131 wherein the enriched population of cells are derived from a perivascular niche within a non-haemopoietic vascularised tissue.

147. (Previously Presented) The method of claim 131 wherein the enriched population is cultured and/or expanded prior to administration.

148. (Previously Presented) The method of claim 147 wherein the cultured and/or expanded population comprises at least 0.01% MPCs capable of forming a clonogenic colony and differentiating to three or more mesenchymal tissue types.

149. (Previously Presented) The method of claim 147 wherein the cultured and/or expanded population comprises at least 1% MPCs capable of forming a clonogenic colony.

150. (Previously Presented) The method of claim 147 wherein the cultured and/or expanded population comprises at least 0.1% STRO-1bright MPCs.

151. (Previously Presented) The method of claim 147 wherein the cultured and/or expanded population comprises at least 1% STRO-1bright MPCs.

152. (Previously Presented) The method of claim 147 wherein the cultured and/or expanded population comprises at least 10% STRO-1bright MPCs.

153. (Previously Presented) The method of claim 147 wherein the cell population is expanded in the range of between 10^2 to 10^4 fold.

154. (Previously Presented) The method of claim 131 wherein the enriched population of cells is administered by injection into the target tissue or close to the target tissue.

155. (Previously Presented) The method of claim 131 wherein the enriched population of cells is administered systemically or topically.

156. (Previously Presented) The method of claim 131 wherein at least about 10^5 cells are administered.

157. (Previously Presented) The method of claim 131 further comprising coadministration of a substance to enhance formation of blood vessels.

158. (Previously Presented) The method of claim 131 wherein the patient is suffering from a disease associated with loss of cells expressing alpha smooth muscle actin from vasculature or perivascular tissue.

159. (Previously Presented) The method of claim 158 wherein the

enriched population of cells is administered to target tissue containing abnormal blood vessels in need of repair, including abnormally proliferating, leaky, or aneurysmal blood vessels.

160. (Previously Presented) The method of claim 131 wherein the target tissue exhibits ischemia.

161. (Previously Presented) The method of claim 160 wherein said patient is in need of treatment for a condition selected from the group consisting of cerebrovascular ischemia, renal ischemia, pulmonary ischemia, limb ischemia, ischemic cardiomyopathy and myocardial ischemia.

162. (Previously Presented) The method of claim 131 wherein the target tissue is myocardium.

163. (Previously Presented) The method of claim 162 wherein the said subject suffers from a cardiovascular disease consisting of ischemic heart disease, coronary artery disease, acute myocardial infarction, congestive heart failure, cardiomyopathy, or angina.

164. (Previously Presented) The method of claim 162 wherein the cells are introduced into the body of the subject by localized injection, systemic injection, in a patch, or on a stent.

165. (Previously Presented) The method of claim 162 wherein the effective amount of the enriched population of MPC is administered by intracoronary catheter, or by intramyocardial, trans-epicardial or transendocardial injection.

166. (Previously Presented) The method of claim 162 wherein the enriched population of cells assemble into new blood vessel structures.

167. (Previously Presented) The method of claim 162 wherein the enriched population of cells induce formation of new blood vessel structures.

168. (Previously Presented) The method of claim 162 wherein the enriched population of cells induce formation of new cardiomyocytes.

169. (Previously Presented) The method of claim 162 wherein the enriched population of cells induce proliferation of resident cardiomyocytes.

170. (Previously Presented) The method of claim 131 wherein the cells are autologous.

171. (Previously Presented) The method of claim 131 wherein the cells are from an allogeneic source.

172. (Previously Presented) A method of inducing formation or repair of blood vessels, the method comprising the steps of culturing and/or expanding an enriched population of cells that express the marker STRO-1, and contacting said cultured and/or expanded cells to tissue in need of blood vessel formation or repair in order to generate new blood vessels or to repair existing blood vessels.

173. (Previously Presented) A method of inducing repair of blood vessels in a patient suffering from a disease associated

with loss of cells expressing alpha smooth muscle actin from vasculature or perivascular tissue, the method comprising the steps of culturing and/or expanding an enriched population of cells that express the marker STRO-1, and contacting said cultured and/or expanded cells to tissue in need of blood vessel repair in order to result in a coating of blood vessels with alpha-smooth muscle actin-positive cells.

174. (Previously Presented) The method of claim 173 wherein the cultured and/or expanded population of cells is administered to target tissue containing abnormally proliferating, leaky, or aneurysmal blood vessels in need of repair.

175. (Previously Presented) The method of claim 172 wherein the enriched population of cells comprises at least 0.01% MPCs capable of forming a clonogenic colony.

176. (Previously Presented) The method of claim 172 wherein the enriched population of cells comprises at least 1% MPCs capable of forming a clonogenic colony.

177. (Previously Presented) The method of claim 172 wherein the enriched population of cells comprise at least 0.01% STRO-1bright MPCs.

178. (Previously Presented) The method of claim 172 wherein the enriched population of cells comprise at least 0.1% STRO-1bright MPCs.

179. (Previously Presented) The method of claim 172 wherein the enriched population of cells comprise at least 1% STRO-

1bright MPCs.

180. (Previously Presented) The method of claim 172 wherein the enriched population of cells are positive for any one or more of the markers 3G5, MUC18/CD146, and alpha-smooth muscle actin.

181. (Previously Presented) The method of claim 172 wherein the enriched population of cells additionally co-express the marker VCAM-1.

182. (Previously Presented) The method of claim 173 wherein the enriched population of cells co-express any one or more of the markers selected from the group consisting of THY-1, VCAM-1, ICAM-1, PECAM-1, CD49a/CD49b/CD29, CD49c/CD29, CD49d/CD29, CD29, CD61, integrin beta5, 6-19, thrombomodulin, CD10, CD13, SCF, PDGF-R, EGF-R, IGF-1R, NGF-R, FGF-R, Leptin-R and (STRO-2).

183. (Previously Presented) The method of claim 172 wherein the enriched population of cells are negative for hematopoietic lineage markers, including, but not limited to, CD34, CD45, and glycophorin-A.

184. (Previously Presented) The method of claim 172 wherein the population is enriched from a tissue of the group comprising, but not limited to skin, liver, kidney, heart, adipose tissue, teeth, dental pulp, retina, brain, hair follicles, intestine, lung, spleen, lymph node, thymus, pancreas, bone, ligament, bone marrow, tendon, and skeletal muscle.

185. (Previously Presented) The method of claim 172 wherein the

enriched population of cells is isolated from a perivascular niche within a vascularised tissue source.

186. (Previously Presented) The method of claim 172 wherein the enriched population of cells is isolated from a perivascular niche within a non-haemopoietic vascularised tissue.

187. (Currently Amended) The method of claim ~~187~~ 172 wherein the cultured and/or expanded population comprises at least 0.01% MPCs capable of forming a clonogenic colony.

188. (Previously Presented) The method of claim 187 wherein the cultured and/or expanded population comprises at least 1% MPCs capable of forming a clonogenic colony.

189. (Previously Presented) The method of claim 187 wherein the cultured and/or expanded population comprises at least 0.1% STRO-1bright MPCs.

190. (Previously Presented) The method of claim 187 wherein the cultured and/or expanded population comprises at least 1% STRO-1bright MPCs.

191. (Previously Presented) The method of claim 187 wherein the cultured and/or expanded population comprises at least 10% STRO-1bright MPCs.